

SEQUENCE LISTING

<110> Bristol-Myers Squibb Company

<120> A NOVEL HUMAN G-PROTEIN COUPLED RECEPTOR, HGPRBMY11, EXPRESSED HIGHLY IN HEART AND VARIANTS THEREOF

<130> D0075.NP

<150> 60/249,613

<151> 2000-11-17

<150> 60/257,611

<151> 2000-12-21

<150> 60/305,818

<151> 2001-07-16

<160> 81

<170> PatentIn version 3.0

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tttccatttt ctttgaaatg agcaacctga attactcgga ggagaaaggc aggagagata 180

gaggcagcag aagccagggc agctgaaaga cagagacctt cagtctgaac caacaacaag 240

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tacttgctcg aactagatat cccttgaatg tgcacacaaa aagtgaatgg gtcatttgat 360

aagggaaaaa taggttccaa gatggctgaa taggaagagc tccagctctg agatcccagt 420

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Met Glu Pro Asn Gly Thr Phe
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agc aat aac aac agc agg aac tgc aca att gaa aac ttc aag aga gaa 583

Ser Asn Asn Asn Ser Arg Asn Cys Thr Ile Glu Asn Phe Lys Arg Glu

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ttt ttc cca att gta tat ctg ata ata ttt ttc tgg gga gtc ttg gga 631

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|--|
| Phe | Phe | Pro | Ile | Val | Tyr | Leu | Ile | Ile | Phe | Phe | Trp | Gly | Val | Leu | Gly | | |
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| aat | ggg | ttg | tcc | ata | tat | ggt | ttc | ctg | cag | cct | tat | aag | aag | tcc | aca | 679 | |
| Asn | Gly | Leu | Ser | Ile | Tyr | Val | Phe | Leu | Gln | Pro | Tyr | Lys | Lys | Ser | Thr | | |
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| Ser | Val | Asn | Val | Phe | Met | Leu | Asn | Leu | Ala | Ile | Ser | Asp | Leu | Leu | Phe | | |
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| Ile | Ser | Thr | Leu | Pro | Phe | Arg | Ala | Asp | Tyr | Tyr | Leu | Arg | Gly | Ser | Asn | | |
| | | | 75 | | | | | 80 | | | | | 85 | | | | |
| tgg | ata | ttt | gga | gac | ctg | gcc | tgc | agg | att | atg | tct | tat | tcc | ttg | tat | 823 | |
| Trp | Ile | Phe | Gly | Asp | Leu | Ala | Cys | Arg | Ile | Met | Ser | Tyr | Ser | Leu | Tyr | | |
| | | | 90 | | | | 95 | | | | | 100 | | | | | |
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| Val | Asn | Met | Tyr | Ser | Ser | Ile | Tyr | Phe | Leu | Thr | Val | Leu | Ser | Val | Val | | |
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| Arg | Phe | Leu | Ala | Met | Val | His | Pro | Phe | Arg | Leu | Leu | His | Val | Thr | Ser | | |
| | | | | 120 | | 125 | | | | 130 | | | | 135 | | | |
| atc | agg | agt | gcc | tgg | atc | ctc | tgt | ggg | atc | ata | tgg | atc | ctt | atc | atg | 967 | |
| Ile | Arg | Ser | Ala | Trp | Ile | Leu | Cys | Gly | Ile | Ile | Trp | Ile | Leu | Ile | Met | | |
| | | | | 140 | | | | 145 | | | | | 150 | | | | |
| gct | tcc | tca | ata | atg | ctc | ctg | gac | agt | ggc | tct | gag | cag | aac | ggc | agt | 1015 | |
| Ala | Ser | Ser | Ile | Met | Leu | Leu | Asp | Ser | Gly | Ser | Glu | Gln | Asn | Gly | Ser | | |
| | | | 155 | | | | | 160 | | | | | 165 | | | | |
| gtc | aca | tca | tgc | tta | gag | ctg | aat | ctc | tat | aaa | att | gct | aag | ctg | cag | 1063 | |
| Val | Thr | Ser | Cys | Leu | Glu | Leu | Asn | Leu | Tyr | Lys | Ile | Ala | Lys | Leu | Gln | | |
| | | | 170 | | | | 175 | | | | | 180 | | | | | |
| acc | atg | aac | tat | att | gcc | ttg | gtg | gtg | ggc | tgc | ctg | ctg | cca | ttt | ttc | 1111 | |
| Thr | Met | Asn | Tyr | Ile | Ala | Leu | Val | Val | Gly | Cys | Leu | Leu | Pro | Phe | Phe | | |
| | | | 185 | | | 190 | | | | | 195 | | | | | | |
| aca | ctc | agc | atc | tgt | tat | ctg | ctg | atc | att | cgg | ggt | ctg | tta | aaa | gtg | 1159 | |
| Thr | Leu | Ser | Ile | Cys | Tyr | Leu | Leu | Ile | Ile | Arg | Val | Leu | Leu | Lys | Val | | |
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| gag | gtc | cca | gaa | tgc | ggg | ctg | cgg | ggt | tct | cac | agg | aag | gca | ctg | acc | 1207 | |
| Glu | Val | Pro | Glu | Ser | Gly | Leu | Arg | Val | Ser | His | Arg | Lys | Ala | Leu | Thr | | |
| | | | 220 | | | | | 225 | | | | | 230 | | | | |
| acc | atc | atc | atc | acc | ttg | atc | atc | ttc | ttc | ttg | tgt | ttc | ctg | ccc | tat | 1255 | |
| Thr | Ile | Ile | Ile | Thr | Leu | Ile | Ile | Phe | Phe | Leu | Cys | Phe | Leu | Pro | Tyr | | |
| | | | 235 | | | | 240 | | | | | 245 | | | | | |
| cac | aca | ctg | agg | acc | gtc | cac | ttg | acg | aca | tgg | aaa | gtg | ggt | tta | tgc | 1303 | |
| His | Thr | Leu | Arg | Thr | Val | His | Leu | Thr | Thr | Trp | Lys | Val | Gly | Leu | Cys | | |

| | | | |
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| aaa gac aga ctg cat aaa gct ttg gtt atc aca ctg gcc ttg gca gca | | | 1351 |
| Lys Asp Arg Leu His Lys Ala Leu Val Ile Thr Leu Ala Leu Ala Ala | | | |
| 265 | 270 | 275 | |
| gcc aat gcc tgc ttc aat cct ctg ctc tat tac ttt gct ggg gag aat | | | 1399 |
| Ala Asn Ala Cys Phe Asn Pro Leu Leu Tyr Tyr Phe Ala Gly Glu Asn | | | |
| 280 | 285 | 290 | 295 |
| ttt aag gac aga cta aag tct gca ctc aga aaa ggc cat cca cag aag | | | 1447 |
| Phe Lys Asp Arg Leu Lys Ser Ala Leu Arg Lys Gly His Pro Gln Lys | | | |
| 300 | 305 | 310 | |
| gca aag aca aag tgt gtt ttc cct gtt agt gtg tgg ttg aga aag gaa | | | 1495 |
| Ala Lys Thr Lys Cys Val Phe Pro Val Ser Val Trp Leu Arg Lys Glu | | | |
| 315 | 320 | 325 | |
| aca aga gta taaggagctc ttagatgaga cctgttcttg tatecttgtg | | | 1544 |
| Thr Arg Val | | | |
| 330 | | | |
| ccatcttca ttcactcata gtctccaaat gactttgtat ttacatcact cccaacaaat | | | 1604 |
| gttgattctt aatatttagt tgaccattac ttttgtaat aagacctact tcaaaaaattt | | | 1664 |
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| 20 | 25 | 30 | |
| Phe Phe Trp Gly Val Leu Gly Asn Gly Leu Ser Ile Tyr Val Phe Leu | | | |
| 35 | 40 | 45 | |
| Gln Pro Tyr Lys Lys Ser Thr Ser Val Asn Val Phe Met Leu Asn Leu | | | |
| 50 | 55 | 60 | |
| Ala Ile Ser Asp Leu Leu Phe Ile Ser Thr Leu Pro Phe Arg Ala Asp | | | |
| 65 | 70 | 75 | 80 |
| Tyr Tyr Leu Arg Gly Ser Asn Trp Ile Phe Gly Asp Leu Ala Cys Arg | | | |

85

90

95

Ile Met Ser Tyr Ser Leu Tyr Val Asn Met Tyr Ser Ser Ile Tyr Phe
100 105 110

Leu Thr Val Leu Ser Val Val Arg Phe Leu Ala Met Val His Pro Phe
115 120 125

Arg Leu Leu His Val Thr Ser Ile Arg Ser Ala Trp Ile Leu Cys Gly
130 135 140

Ile Ile Trp Ile Leu Ile Met Ala Ser Ser Ile Met Leu Leu Asp Ser
145 150 155 160

Gly Ser Glu Gln Asn Gly Ser Val Thr Ser Cys Leu Glu Leu Asn Leu
165 170 175

Tyr Lys Ile Ala Lys Leu Gln Thr Met Asn Tyr Ile Ala Leu Val Val
180 185 190

Gly Cys Leu Leu Pro Phe Phe Thr Leu Ser Ile Cys Tyr Leu Leu Ile
195 200 205

Ile Arg Val Leu Leu Lys Val Glu Val Pro Glu Ser Gly Leu Arg Val
210 215 220

Ser His Arg Lys Ala Leu Thr Thr Ile Ile Ile Thr Leu Ile Ile Phe
225 230 235 240

Phe Leu Cys Phe Leu Pro Tyr His Thr Leu Arg Thr Val His Leu Thr
245 250 255

Thr Trp Lys Val Gly Leu Cys Lys Asp Arg Leu His Lys Ala Leu Val
260 265 270

Ile Thr Leu Ala Leu Ala Ala Ala Asn Ala Cys Phe Asn Pro Leu Leu
275 280 285

Tyr Tyr Phe Ala Gly Glu Asn Phe Lys Asp Arg Leu Lys Ser Ala Leu
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| 1 | | | 5 | | | | | | 10 | | | | | 15 | |
| Leu | Leu | Ala | Gly | Gly | Trp | Ala | Ala | Gly | Asn | Ala | Thr | Thr | Lys | Cys | Ser |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Leu | Thr | Lys | Thr | Gly | Phe | Gln | Phe | Tyr | Tyr | Leu | Pro | Thr | Val | Tyr | Ile |
| | | 35 | | | | | 40 | | | | | 45 | | | |
| Leu | Val | Phe | Ile | Thr | Gly | Phe | Leu | Gly | Asn | Ser | Val | Ala | Ile | Trp | Met |
| | 50 | | | | | 55 | | | | 60 | | | | | |
| Phe | Val | Phe | His | Met | Arg | Pro | Trp | Ser | Gly | Ile | Ser | Val | Tyr | Met | Phe |
| | 65 | | | | 70 | | | | | 75 | | | | 80 | |
| Asn | Leu | Ala | Leu | Ala | Asp | Phe | Leu | Tyr | Val | Leu | Thr | Leu | Pro | Ala | Leu |
| | | | | 85 | | | | | 90 | | | | | 95 | |
| Ile | Phe | Tyr | Tyr | Phe | Asn | Lys | Thr | Asp | Trp | Ile | Phe | Gly | Asp | Val | Met |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Cys | Lys | Leu | Gln | Arg | Phe | Ile | Phe | His | Val | Asn | Leu | Tyr | Gly | Ser | Ile |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Leu | Phe | Leu | Thr | Cys | Ile | Ser | Val | His | Arg | Tyr | Thr | Gly | Val | Val | His |
| | 130 | | | | 135 | | | | | | 140 | | | | |
| Pro | Leu | Lys | Ser | Leu | Gly | Arg | Leu | Lys | Lys | Lys | Asn | Ala | Val | Tyr | Val |
| | 145 | | | | 150 | | | | | 155 | | | | | 160 |
| Ser | Ser | Leu | Val | Trp | Ala | Leu | Val | Val | Ala | Val | Ile | Ala | Pro | Ile | Leu |
| | | | 165 | | | | | | 170 | | | | | 175 | |
| Phe | Tyr | Ser | Gly | Thr | Gly | Val | Arg | Arg | Asn | Lys | Thr | Ile | Thr | Cys | Tyr |
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| Asp | Thr | Thr | Ala | Asp | Glu | Tyr | Leu | Arg | Ser | Tyr | Phe | Val | Tyr | Ser | Met |
| | | 195 | | | | | 200 | | | | | 205 | | | |
| Cys | Thr | Thr | Val | Phe | Met | Phe | Cys | Ile | Pro | Phe | Ile | Val | Ile | Leu | Gly |
| | | 210 | | | | 215 | | | | | 220 | | | | |
| Cys | Tyr | Gly | Leu | Ile | Val | Lys | Ala | Leu | Ile | Tyr | Lys | Asp | Leu | Asp | Asn |
| | 225 | | | | 230 | | | | | 235 | | | | | 240 |

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Ser Pro Leu Arg Arg Lys Ser Ile Tyr Leu Val Ile Ile Val Leu Thr
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Val Phe Ala Val Ser Tyr Leu Pro Phe His Val Met Lys Thr Leu Asn
      260                      265                      270

Leu Arg Ala Arg Leu Asp Phe Gln Thr Pro Gln Met Cys Ala Phe Asn
      275                      280                      285

Asp Lys Val Tyr Ala Thr Tyr Gln Val Thr Arg Gly Leu Ala Ser Leu
      290                      295                      300

Asn Ser Cys Val Asp Pro Ile Leu Tyr Phe Leu Ala Gly Asp Thr Phe
      305                      310                      315                      320

Arg Arg Arg Leu Ser Arg Ala Thr Arg Lys Ser Ser Arg Arg Ser Glu
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Pro Asn Val Gln Ser Lys Ser Glu Glu Met Thr Leu Asn Ile Leu Thr
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Glu Tyr Lys Gln Asn Gly Asp Thr Ser Leu
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Leu Thr Lys Thr Gly Phe Gln Phe Tyr Tyr Leu Pro Thr Val Tyr Ile
      35                      40                      45

Leu Val Phe Ile Thr Gly Phe Leu Gly Asn Ser Val Ala Ile Trp Met
      50                      55                      60

Phe Val Phe His Met Arg Pro Trp Ser Gly Ile Ser Val Tyr Met Phe
      65                      70                      75                      80

Asn Leu Ala Leu Ala Asp Phe Leu Tyr Val Leu Thr Leu Pro Ala Leu
      85                      90                      95

Ile Phe Tyr Tyr Phe Asn Lys Thr Asp Trp Ile Phe Gly Asp Val Met
      100                     105                     110

Cys Lys Leu Gln Arg Phe Ile Phe His Val Asn Leu Tyr Gly Ser Ile
      115                     120                     125

Leu Phe Leu Thr Cys Ile Ser Val His Arg Tyr Thr Gly Val Val His

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130 135 140
 Pro Leu Lys Ser Leu Gly Arg Leu Lys Lys Lys Asn Ala Val Tyr Val
 145 150 155
 Ser Ser Leu Val Trp Ala Leu Val Val Ala Val Ile Ala Pro Ile Leu
 165 170 175
 Phe Tyr Ser Gly Thr Gly Val Arg Arg Asn Lys Thr Ile Thr Cys Tyr
 180 185 190
 Asp Thr Thr Ala Asp Glu Tyr Leu Arg Ser Tyr Phe Val Tyr Ser Met
 195 200 205
 Cys Thr Thr Val Phe Met Phe Cys Ile Pro Phe Ile Val Ile Leu Gly
 210 215 220
 Cys Tyr Gly Leu Ile Val Lys Ala Leu Ile Tyr Lys Asp Leu Asp Asn
 225 230 235 240
 Ser Pro Leu Arg Arg Lys Ser Ile Tyr Leu Val Ile Ile Val Leu Thr
 245 250 255
 Val Phe Ala Val Ser Tyr Leu Pro Phe His Val Met Lys Thr Leu Asn
 260 265 270
 Leu Arg Ala Arg Leu Asp Phe Gln Thr Pro Gln Met Cys Ala Phe Asn
 275 280 285
 Asp Lys Val Tyr Ala Thr Tyr Gln Val Thr Arg Gly Leu Ala Ser Leu
 290 295 300
 Asn Ser Cys Val Asp Pro Ile Leu Tyr Phe Leu Ala Gly Asp Thr Phe
 305 310 315 320
 Arg Arg Arg Leu Ser Arg Ala Thr Arg Lys Ser Ser Arg Arg Ser Glu
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 35 40 45
 Phe Gln Phe Tyr Tyr Leu Pro Ala Val Tyr Ile Leu Val Phe Ile Ile
 50 55 60
 Gly Phe Leu Gly Asn Ser Val Ala Ile Trp Met Phe Val Phe His Met
 65 70 75 80
 Lys Pro Trp Ser Gly Ile Ser Val Tyr Met Phe Asn Leu Ala Leu Ala
 85 90 95
 Asp Phe Leu Tyr Val Leu Thr Leu Pro Ala Leu Ile Phe Tyr Tyr Phe
 100 105 110
 Asn Lys Thr Asp Trp Ile Phe Gly Asp Val Met Cys Lys Leu Gln Arg
 115 120 125
 Phe Ile Phe His Val Asn Leu Tyr Gly Ser Ile Leu Phe Leu Thr Cys
 130 135 140
 Ile Ser Ala His Arg Tyr Ser Gly Val Val Tyr Pro Leu Lys Ser Leu
 145 150 155 160
 Gly Arg Leu Lys Lys Lys Asn Ala Ile Tyr Val Ser Val Leu Val Trp
 165 170 175
 Leu Ile Val Val Val Ala Ile Ser Pro Ile Leu Phe Tyr Ser Gly Thr
 180 185 190
 Gly Ile Arg Lys Asn Lys Thr Val Thr Cys Tyr Asp Ser Thr Ser Asp
 195 200 205
 Glu Tyr Leu Arg Ser Tyr Phe Ile Tyr Ser Met Cys Thr Thr Val Ala
 210 215 220
 Met Phe Cys Ile Pro Leu Val Leu Ile Leu Gly Cys Tyr Gly Leu Ile
 225 230 235 240
 Val Arg Ala Leu Ile Tyr Lys Asp Leu Asp Asn Ser Pro Leu Arg Arg
 245 250 255
 Lys Ser Ile Tyr Leu Val Ile Ile Val Leu Thr Val Phe Ala Val Ser
 260 265 270
 Tyr Ile Pro Phe His Val Met Lys Thr Met Asn Leu Arg Ala Arg Leu
 275 280 285
 Asp Phe Gln Thr Pro Glu Met Cys Asp Phe Asn Asp Arg Val Tyr Ala
 290 295 300
 Thr Tyr Gln Val Thr Arg Gly Leu Ala Ser Leu Asn Ser Cys Val Asp
 305 310 315 320
 Pro Ile Leu Tyr Phe Leu Ala Gly Asp Thr Phe Arg Arg Arg Leu Ser
 325 330 335

Arg Ala Thr Arg Lys Ala Ser Arg Arg Ser Glu Ala Asn Leu Gln Ser
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Lys Ser Glu Glu Met Thr Leu Asn Ile Leu Ser Glu Phe Lys Gln Asn
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Gly Asp Thr Ser Leu
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<213> homo sapiens

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Ile Lys Thr Tyr His Lys Lys Ser Ala Phe Gln Val Tyr Met Ile Asn
50 55 60

Leu Ala Val Ala Asp Leu Leu Cys Val Cys Thr Leu Pro Leu Arg Val
65 70 75 80

Val Tyr Tyr Val His Lys Gly Ile Trp Leu Phe Gly Asp Phe Leu Cys
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Arg Leu Ser Thr Tyr Ala Leu Tyr Val Asn Leu Tyr Cys Ser Ile Phe
100 105 110

Phe Met Thr Ala Met Ser Phe Phe Arg Cys Ile Ala Ile Val Phe Pro
115 120 125

Val Gln Asn Ile Asn Leu Val Thr Gln Lys Lys Ala Arg Phe Val Cys
130 135 140

Val Gly Ile Trp Ile Phe Val Ile Leu Thr Ser Ser Pro Phe Leu Met
145 150 155 160

Ala Lys Pro Gln Lys Asp Glu Lys Asn Asn Thr Lys Cys Phe Glu Pro
165 170 175

Pro Gln Asp Asn Gln Thr Lys Asn His Val Leu Val Leu His Tyr Val
180 185 190

Ser Leu Phe Val Gly Phe Ile Ile Pro Phe Val Ile Ile Ile Val Cys
195 200 205

Tyr Thr Met Ile Ile Leu Thr Leu Leu Lys Lys Ser Met Lys Lys Asn
210 215 220

Leu Ser Ser His Lys Lys Ala Ile Gly Met Ile Met Val Val Thr Ala
 225 230 235 240
 Ala Phe Leu Val Ser Phe Met Pro Tyr His Ile Gln Arg Thr Ile His
 245 250 255
 Leu His Phe Leu His Asn Glu Thr Lys Pro Cys Asp Ser Val Leu Arg
 260 265 270
 Met Gln Lys Ser Val Val Ile Thr Leu Ser Leu Ala Ala Ser Asn Cys
 275 280 285
 Cys Phe Asp Pro Leu Leu Tyr Phe Phe Ser Gly Gly Asn Phe Arg Lys
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 35 40 45
 Thr Thr Thr Tyr Met Leu Asn Leu Ala Ile Ser Asp Leu Leu Phe Val
 50 55 60
 Phe Thr Leu Pro Phe Arg Ile Tyr Tyr Phe Val Val Arg Asn Trp Pro
 65 70 75 80
 Phe Gly Asp Val Leu Cys Lys Ile Ser Val Thr Leu Phe Tyr Thr Asn
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 Met Tyr Gly Ser Ile Leu Phe Leu Thr Cys Ile Ser Val Asp Arg Phe
 100 105 110
 Leu Ala Ile Val His Pro Phe Arg Ser Lys Thr Leu Arg Thr Lys Arg
 115 120 125
 Asn Ala Arg Ile Val Cys Val Ala Val Trp Ile Thr Val Leu Ala Gly

130 135 140
 Ser Thr Pro Ala Ser Phe Phe Gln Ser Thr Asn Arg Gln Asn Asn Thr
 145 150 155 160
 Glu Gln Arg Thr Cys Phe Glu Asn Phe Pro Glu Ser Thr Trp Lys Thr
 165 170 175
 Tyr Leu Ser Arg Ile Val Ile Phe Ile Glu Ile Val Gly Phe Phe Ile
 180 185 190
 Pro Leu Ile Leu Asn Val Thr Cys Ser Thr Met Val Leu Arg Thr Leu
 195 200 205
 Asn Lys Pro Leu Thr Leu Ser Arg Asn Lys Leu Ser Lys Lys Lys Val
 210 215 220
 Leu Lys Met Ile Phe Val His Leu Val Ile Phe Cys Phe Cys Phe Val
 225 230 235 240
 Pro Tyr Asn Ile Thr Leu Ile Leu Tyr Ser Leu Met Arg Thr Gln Thr
 245 250 255
 Trp Ile Asn Cys Ser Val Val Thr Ala Val Arg Thr Met Tyr Pro Val
 260 265 270
 Thr Leu Cys Ile Ala Val Ser Asn Cys Cys Phe Asp Pro Ile Val Tyr
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 290 295 300
 His Gln Asn Thr
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 35 40 45
 Asn Thr Leu Ala Leu Trp Leu Phe Ile Arg Asp His Lys Ser Gly Thr
 50 55 60
 Pro Ala Asn Val Phe Leu Met His Leu Ala Val Ala Asp Leu Ser Cys
 65 70 75 80

Val Leu Val Leu Pro Thr Arg Leu Val Tyr His Phe Ser Gly Asn His
 85 90 95
 Trp Pro Phe Gly Glu Ile Ala Cys Arg Leu Thr Gly Phe Leu Phe Tyr
 100 105 110
 Leu Asn Met Tyr Ala Ser Ile Tyr Phe Leu Thr Cys Ile Ser Ala Asp
 115 120 125
 Arg Phe Leu Ala Ile Val His Pro Val Lys Ser Leu Lys Leu Arg Arg
 130 135 140
 Pro Leu Tyr Ala His Leu Ala Cys Ala Phe Leu Trp Val Val Val Ala
 145 150 155 160
 Val Ala Met Ala Pro Leu Leu Val Ser Pro Gln Thr Val Gln Thr Asn
 165 170 175
 His Thr Val Val Cys Leu Gln Leu Tyr Arg Glu Lys Ala Ser His His
 180 185 190
 Ala Leu Val Ser Leu Ala Val Ala Phe Thr Phe Pro Phe Ile Thr Thr
 195 200 205
 Val Thr Cys Tyr Leu Leu Ile Ile Arg Ser Leu Arg Gln Gly Leu Arg
 210 215 220
 Val Glu Lys Arg Leu Lys Thr Lys Ala Val Arg Met Ile Ala Ile Val
 225 230 235 240
 Leu Ala Ile Phe Leu Val Cys Phe Val Pro Tyr His Val Asn Arg Ser
 245 250 255
 Val Tyr Val Leu His Tyr Arg Ser His Gly Ala Ser Cys Ala Thr Gln
 260 265 270
 Arg Ile Leu Ala Leu Ala Asn Arg Ile Thr Ser Cys Leu Thr Ser Leu
 275 280 285
 Asn Gly Ala Leu Asp Pro Ile Met Tyr Phe Phe Val Ala Glu Lys Phe
 290 295 300
 Arg His Ala Leu Cys Asn Leu Leu Cys Gly Lys Arg Leu Lys Gly Pro
 305 310 315 320
 Pro Pro Ser Phe Glu Gly Lys Thr Asn Glu Ser Ser Leu Ser Ala Lys
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 Ser Glu Leu

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Asn Gly Leu Ser Ile Tyr Val Phe Leu
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Leu Pro Phe Arg Ala Asp Tyr Tyr Leu
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 Cys Tyr Leu
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 Leu Pro Tyr His Thr Leu
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 Pro Leu Leu Tyr Tyr Phe Ala
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ctccccggac tcctgaggtc acatgctgtg tgggtggacgt aagccacgaa gacctgagg      180
tcaagttcaa ctggtacgtg gacggcgtgg aggtgcataa tgccaagaca aagccgcggg      240
aggagcagta caacagcacg taccgtgtgg tcagcgtcct caccgtcctg caccaggact      300
ggctgaatgg caaggagtac aagtgcgaag tctccaacaa agccctccca acccccatcg      360
agaaaaccat ctccaaagcc aaagggcagc cccgagaacc acaggtgtac accctgcccc      420
catccccgga tgagctgacc aagaaccagg tcagcctgac ctgcctggtc aaaggcttct      480
atccaagcga catgccgtg gagtgggaga gcaatgggca gccggagaac aactacaaga      540
ccacgcctcc cgtgtggac tccgacggct ccttcttctt ctacagcaag ctcaccgtgg      600
acaagagcag gtggcagcag gggaaactct tctcatgctc cgtgatgcac gaggcctctgc      660
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Asp Tyr Lys Asp Asp Asp Lys
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atg gaa cca aat ggc acc ttc agc aat aac aac agc agg aac tgc aca      96
Met Glu Pro Asn Gly Thr Phe Ser Asn Asn Asn Ser Arg Asn Cys Thr
20 25 30

att gaa aac ttc aag aga gaa ttt ttc cca att gta tat ctg ata ata      144
Ile Glu Asn Phe Lys Arg Glu Phe Phe Pro Ile Val Tyr Leu Ile Ile
35 40 45

ttt ttc tgg gga gtc ttg gga aat ggg ttg tcc ata tat gtt ttc ctg      192
Phe Phe Trp Gly Val Leu Gly Asn Gly Leu Ser Ile Tyr Val Phe Leu
50 55 60

cag cct tat aag aag tcc aca tct gtg aac gtt ttc atg cta aat ctg      240
Gln Pro Tyr Lys Lys Ser Thr Ser Val Asn Val Phe Met Leu Asn Leu
65 70 75 80

gcc att tca gat ctc ctg ttc ata agc acg ctt ccc ttc agg gct gac      288
Ala Ile Ser Asp Leu Leu Phe Ile Ser Thr Leu Pro Phe Arg Ala Asp
85 90 95

tat tat ctt aga ggc tcc aat tgg ata ttt gga gac ctg gcc tgc agg      336
Tyr Tyr Leu Arg Gly Ser Asn Trp Ile Phe Gly Asp Leu Ala Cys Arg
100 105 110

att atg tct tat tcc ttg tat gtc aac atg tac agc agt att tat ttc      384
Ile Met Ser Tyr Ser Leu Tyr Val Asn Met Tyr Ser Ser Ile Tyr Phe
115 120 125

ctg acc gtg ctg agt gtt gtg cgt ttc ctg gca atg gtt cac ccc ttt      432
Leu Thr Val Leu Ser Val Val Arg Phe Leu Ala Met Val His Pro Phe
130 135 140

cgg ctt ctg cat gtc acc agc atc agg agt gcc tgg atc ctc tgt ggg      480
Arg Leu Leu His Val Thr Ser Ile Arg Ser Ala Trp Ile Leu Cys Gly

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|---------------------|-------------------------|-------------------------|-----|------|
| atc ata tgg atc ctt | atc atg gct tcc tca | ata atg ctc ctg gac agt | | 528 |
| Ile Ile Trp Ile Leu | Ile Met Ala Ser Ser | Ile Met Leu Leu Asp Ser | | |
| | 165 | 170 | 175 | |
| ggc tct gag cag aac | ggc agt gtc aca tca tgc | tta gag ctg aat ctc | | 576 |
| Gly Ser Glu Gln Asn | Gly Ser Val Thr Ser | Cys Leu Glu Leu Asn Leu | | |
| | 180 | 185 | 190 | |
| tat aaa att gct aag | ctg cag acc atg aac | tat att gcc ttg gtg gtg | | 624 |
| Tyr Lys Ile Ala Lys | Leu Gln Thr Met Asn | Tyr Ile Ala Leu Val Val | | |
| | 195 | 200 | 205 | |
| ggc tgc ctg ctg cca | ttt ttc aca ctc agc | atc tgt tat ctg ctg atc | | 672 |
| Gly Cys Leu Leu Pro | Phe Phe Thr Leu Ser | Ile Cys Tyr Leu Leu Ile | | |
| | 210 | 215 | 220 | |
| att cgg gtt ctg tta | aaa gtg gag gtc cca | gaa tgc ggg ctg cgg gtt | | 720 |
| Ile Arg Val Leu Leu | Lys Val Glu Val Pro | Glu Ser Gly Leu Arg Val | | |
| | 225 | 230 | 235 | 240 |
| tct cac agg aag gca | ctg acc acc atc atc | acc ttg atc atc ttc | | 768 |
| Ser His Arg Lys Ala | Leu Thr Thr Ile Ile | Ile Ile Thr Leu Ile Phe | | |
| | 245 | 250 | 255 | |
| ttc ttg tgt ttc ctg | ccc tat cac aca ctg | agg acc gtc cac ttg acg | | 816 |
| Phe Leu Cys Phe Leu | Pro Tyr His Thr Leu | Arg Thr Val His Leu Thr | | |
| | 260 | 265 | 270 | |
| aca tgg aaa gtg ggt | tta tgc aaa gac aga | ctg cat aaa gct ttg gtt | | 864 |
| Thr Trp Lys Val Gly | Leu Cys Lys Asp Arg | Leu His Lys Ala Leu Val | | |
| | 275 | 280 | 285 | |
| atc aca ctg gcc ttg | gca gca gcc aat gcc | tgc ttc aat cct ctg ctc | | 912 |
| Ile Thr Leu Ala Leu | Ala Ala Asn Ala Cys | Phe Asn Pro Leu Leu | | |
| | 290 | 295 | 300 | |
| tat tac ttt gct ggg | gag aat ttt aag gac | aga cta aag tct gca ctc | | 960 |
| Tyr Tyr Phe Ala Gly | Glu Asn Phe Lys Asp | Arg Leu Lys Ser Ala Leu | | |
| | 305 | 310 | 315 | 320 |
| aga aaa ggc cat cca | cag aag gca aag aca | aag tgt gtt ttc cct gtt | | 1008 |
| Arg Lys Gly His Pro | Gln Lys Ala Lys Thr | Lys Cys Val Phe Pro Val | | |
| | 325 | 330 | 335 | |
| agt gtg tgg ttg aga | aag gaa aca aga gta | taa | | 1041 |
| Ser Val Trp Leu Arg | Lys Glu Thr Arg Val | | | |
| | 340 | 345 | | |
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| <212> | PRT | | | |
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 Ile Glu Asn Phe Lys Arg Glu Phe Phe Pro Ile Val Tyr Leu Ile Ile
 35 40 45
 Phe Phe Trp Gly Val Leu Gly Asn Gly Leu Ser Ile Tyr Val Phe Leu
 50 55 60
 Gln Pro Tyr Lys Lys Ser Thr Ser Val Asn Val Phe Met Leu Asn Leu
 65 70 75 80
 Ala Ile Ser Asp Leu Leu Phe Ile Ser Thr Leu Pro Phe Arg Ala Asp
 85 90 95
 Tyr Tyr Leu Arg Gly Ser Asn Trp Ile Phe Gly Asp Leu Ala Cys Arg
 100 105 110
 Ile Met Ser Tyr Ser Leu Tyr Val Asn Met Tyr Ser Ser Ile Tyr Phe
 115 120 125
 Leu Thr Val Leu Ser Val Val Arg Phe Leu Ala Met Val His Pro Phe
 130 135 140
 Arg Leu Leu His Val Thr Ser Ile Arg Ser Ala Trp Ile Leu Cys Gly
 145 150 155 160
 Ile Ile Trp Ile Leu Ile Met Ala Ser Ser Ile Met Leu Leu Asp Ser
 165 170 175
 Gly Ser Glu Gln Asn Gly Ser Val Thr Ser Cys Leu Glu Leu Asn Leu
 180 185 190
 Tyr Lys Ile Ala Lys Leu Gln Thr Met Asn Tyr Ile Ala Leu Val Val
 195 200 205
 Gly Cys Leu Leu Pro Phe Phe Thr Leu Ser Ile Cys Tyr Leu Leu Ile
 210 215 220

Ile Arg Val Leu Leu Lys Val Glu Val Pro Glu Ser Gly Leu Arg Val
225 230 235 240

Ser His Arg Lys Ala Leu Thr Thr Ile Ile Thr Leu Ile Ile Phe
245 250 255

Phe Leu Cys Phe Leu Pro Tyr His Thr Leu Arg Thr Val His Leu Thr
260 265 270

Thr Trp Lys Val Gly Leu Cys Lys Asp Arg Leu His Lys Ala Leu Val
275 280 285

Ile Thr Leu Ala Leu Ala Ala Ala Asn Ala Cys Phe Asn Pro Leu Leu
290 295 300

Tyr Tyr Phe Ala Gly Glu Asn Phe Lys Asp Arg Leu Lys Ser Ala Leu
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Arg Lys Gly His Pro Gln Lys Ala Lys Thr Lys Cys Val Phe Pro Val
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Arg Phe Leu Ala Met Val
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Pro Leu Leu Tyr Tyr Phe Ala
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Ser Gly Leu Arg Val Ser His Arg Lys Ala Leu Thr Thr
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1 5 10

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Ser Glu Met Glu Pro Asn Gly Thr Phe Ser Asn Asn Asn Ser

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Gly Thr Phe Ser Asn Asn Asn Ser Arg Asn Cys Thr Ile Glu
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<400> 44

Asn Asn Asn Ser Arg Asn Cys Thr Ile Glu Asn Phe Lys Arg
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| acc ttc agc aat aac aac agc agg aac tgc aca att gaa aac ttc aag Thr Phe Ser Asn Asn Ser Arg Asn Cys Thr Ile Glu Asn Phe Lys 20 25 30 | 96 |
| aga gaa ttt ttc cca att gta tat ctg ata ata ttt ttc tgg gga gtc Arg Glu Phe Phe Pro Ile Val Tyr Leu Ile Ile Phe Phe Trp Gly Val 35 40 45 | 144 |
| ttg gga aat ggg ttg tcc ata tat gtt ttc ctg cag cct tat aag aag Leu Gly Asn Gly Leu Ser Ile Tyr Val Phe Leu Gln Pro Tyr Lys Lys 50 55 60 | 192 |
| tcc aca tct gtg aac gtt ttc atg cta aat ctg gcc att tca gat ctc Ser Thr Ser Val Asn Val Phe Met Leu Asn Leu Ala Ile Ser Asp Leu 65 70 75 80 | 240 |
| ctg ttc ata agc acg ctt ccc ttc agg gct gac tat tat ctt aga ggc Leu Phe Ile Ser Thr Leu Pro Phe Arg Ala Asp Tyr Tyr Leu Arg Gly 85 90 95 | 288 |
| gcc aat tgg ata ttt gga gac ctg gcc tgc agg att atg tct tat tcc Ser Asn Trp Ile Phe Gly Asp Leu Ala Cys Arg Ile Met Ser Tyr Ser 100 105 110 | 336 |
| ttg tat gtc aac atg tac agc agt att tat ttc ctg acc gtg ctg agt Leu Tyr Val Asn Met Tyr Ser Ser Ile Tyr Phe Leu Thr Val Leu Ser 115 120 125 | 384 |
| gtt gtg cgt ttc ctg gca atg gtt cac ccc ttt cgg ctt ctg cat gtc Val Val Arg Phe Leu Ala Met Val His Pro Phe Arg Leu Leu His Val 130 135 140 | 432 |
| acc agc atc agg agt gcc tgg atc ctc tgt ggg atc ata tgg atc ctt Thr Ser Ile Arg Ser Ala Trp Ile Leu Cys Gly Ile Ile Trp Ile Leu 145 150 155 160 | 480 |
| atc atg gct tcc tca ata atg ctc ctg gac agt ggc tct gag cag aac Ile Met Ala Ser Ser Ile Met Leu Leu Asp Ser Gly Ser Glu Gln Asn 165 170 175 | 528 |
| ggc agt gtc aca tca tgc tta gag ctg aat ctc tat aaa att gct aag Gly Ser Val Thr Ser Cys Leu Glu Leu Asn Leu Tyr Lys Ile Ala Lys 180 185 190 | 576 |
| ctg cag acc atg aac tat att gcc ttg gtg gtg ggc tgc ctg ctg cca Leu Gln Thr Met Asn Tyr Ile Ala Leu Val Val Gly Cys Leu Leu Pro 195 200 205 | 624 |
| ttt ttc aca ctc agc atc tgt tat ctg ctg atc att cgg gtt ctg tta Phe Phe Thr Leu Ser Ile Cys Tyr Leu Leu Ile Ile Arg Val Leu Leu 210 215 220 | 672 |
| aaa gtg gag gtc cca gaa tgg ggg ctg cgg gtt tct cac agg aag gca | 720 |

Lys Val Glu Val Pro Glu Ser Gly Leu Arg Val Ser His Arg Lys Ala
 225 230 235 240

ctg acc acc atc atc atc acc ttg atc atc ttc ttc ttg tgt ttc ctg 768
 Leu Thr Thr Ile Ile Ile Thr Leu Ile Ile Phe Phe Leu Cys Phe Leu
 245 250 255

ccc tat cac aca ctg agg acc gtc cac ttg acg aca tgg aaa gtg ggt 816
 Pro Tyr His Thr Leu Arg Thr Val His Leu Thr Thr Trp Lys Val Gly
 260 265 270

tta tgc aaa gac aga ctg cat aaa gct ttg gtt atc aca ctg gcc ttg 864
 Leu Cys Lys Asp Arg Leu His Lys Ala Leu Val Ile Thr Leu Ala Leu
 275 280 285

gca gca gcc aat gcc tgc ttc aat cct ctg ctc tat tac ttt gct ggg 912
 Ala Ala Ala Asn Ala Cys Phe Asn Pro Leu Leu Tyr Phe Ala Gly
 290 295 300

gag aat ttt aag gac aga cta aag tct gca ctc aga aaa ggc cat cca 960
 Glu Asn Phe Lys Asp Arg Leu Lys Ser Ala Leu Arg Lys Gly His Pro
 305 310 315 320

gag aag gca aag aca aag tgt gtt ttc cct gtt agt gtg tgg ttg aga 1008
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gag gaa aca aga gta taa 1026
 Lys Glu Thr Arg Val
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Arg Glu Phe Phe Pro Ile Val Tyr Leu Ile Ile Phe Phe Trp Gly Val
 35 40 45

Leu Gly Asn Gly Leu Ser Ile Tyr Val Phe Leu Gln Pro Tyr Lys Lys
 50 55 60

Ser Thr Ser Val Asn Val Phe Met Leu Asn Leu Ala Ile Ser Asp Leu
 65 70 75 80

Leu Phe Ile Ser Thr Leu Pro Phe Arg Ala Asp Tyr Tyr Leu Arg Gly
85 90 95

Ser Asn Trp Ile Phe Gly Asp Leu Ala Cys Arg Ile Met Ser Tyr Ser
100 105 110

Leu Tyr Val Asn Met Tyr Ser Ser Ile Tyr Phe Leu Thr Val Leu Ser
115 120 125

Val Val Arg Phe Leu Ala Met Val His Pro Phe Arg Leu Leu His Val
130 135 140

Thr Ser Ile Arg Ser Ala Trp Ile Leu Cys Gly Ile Ile Trp Ile Leu
145 150 155 160

Ile Met Ala Ser Ser Ile Met Leu Leu Asp Ser Gly Ser Glu Gln Asn
165 170 175

Gly Ser Val Thr Ser Cys Leu Glu Leu Asn Leu Tyr Lys Ile Ala Lys
180 185 190

Leu Gln Thr Met Asn Tyr Ile Ala Leu Val Val Gly Cys Leu Leu Pro
195 200 205

Phe Phe Thr Leu Ser Ile Cys Tyr Leu Leu Ile Ile Arg Val Leu Leu
210 215 220

Lys Val Glu Val Pro Glu Ser Gly Leu Arg Val Ser His Arg Lys Ala
225 230 235 240

Leu Thr Thr Ile Ile Ile Thr Leu Ile Ile Phe Phe Leu Cys Phe Leu
245 250 255

Pro Tyr His Thr Leu Arg Thr Val His Leu Thr Thr Trp Lys Val Gly
260 265 270

Leu Cys Lys Asp Arg Leu His Lys Ala Leu Val Ile Thr Leu Ala Leu
275 280 285

Ala Ala Ala Asn Ala Cys Phe Asn Pro Leu Leu Tyr Tyr Phe Ala Gly
290 295 300

Glu Asn Phe Lys Asp Arg Leu Lys Ser Ala Leu Arg Lys Gly His Pro
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Lys Glu Thr Arg Val
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Phe Trp Gly Val Leu Gly Asn Gly Leu Ser Ile Tyr Val Phe Leu Gln
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<210> 63
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<400> 63

Met Leu Leu Asp Ser Gly Ser Glu Gln Asn Gly Ser Val Thr Ser Cys
1 5 10 15

<210> 64
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<400> 64

Gly Ser Glu Gln Asn Gly Ser Val Thr Ser Cys Leu Glu Leu Asn Leu
1 5 10 15

<210> 65
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<400> 65

Glu Val Pro Glu Ser Gly Leu Arg Val Ser His Arg Lys Ala Leu Thr
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<400> 66

Phe Leu Gln Pro Tyr Lys Lys Ser Thr Ser Val Asn Val Phe
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<400> 67

Val Ser Val Trp Leu Arg Lys Glu Thr Arg Val
1 5 10

<210> 68
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<400> 68

Leu Gln Pro Ser Ile Ser Val Ser Glu Met Glu Pro Asn Gly
1 5 10

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<400> 69

Pro Ser Ile Ser Val Ser Glu Met Glu Pro Asn Gly Thr Phe
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Asn Gly Ser Val Thr Ser Cys Leu Glu Leu Asn Leu Tyr Lys

1 5 10

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<400> 72

Met Glu Pro Asn Gly Thr Phe Ser Asn Asn Asn Ser Arg Asn Cys
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<400> 73

Ile Ile Phe Phe Trp Gly Val Leu Gly Asn Gly Leu Ser Ile Tyr Val
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<210> 74
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<400> 74

Phe Trp Gly Val Leu Gly Asn Gly Leu Ser Ile Tyr Val Phe Leu Gln
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<210> 75
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<400> 75

Met Leu Leu Asp Ser Gly Ser Glu Gln Asn Gly Ser Val Thr Ser Cys
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<210> 76
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<400> 76

Gly Ser Glu Gln Asn Gly Ser Val Thr Ser Cys Leu Glu Leu Asn Leu
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<210> 77
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 <212> PRT
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<400> 77

Glu Val Pro Glu Ser Gly Leu Arg Val Ser His Arg Lys Ala Leu Thr
1 5 10 15

<210> 78
<211> 36
<212> DNA
<213> Homo sapiens

<400> 78
ccgctagcgc atggaaaatg gcaccttcag caataa 36

<210> 79
<211> 37
<212> DNA
<213> Homo sapiens

<400> 79
ggcgccgc ttatactctt gtttccttc tcaacca 37

<210> 80
<211> 99
<212> DNA
<213> artificial

<220>
<223> Peptide library random oligo.

<220>
<221> misc_feature
<222> (25)..(83)
<223> wherein "n" equals A, G, C, or T

<220>
<221> misc_feature
<222> (27)..(84)
<223> wherein "b" equals G, C, or T

<400> 80
cgaagcgtaa gggcccagcc ggcennbnnb nnnnnnnnnb nnnnnnnnnb bnnnnnnnnb 60

nnnnnnnnb nnnnnnnnnb bnnbccgggt ccggcgccg 99

<210> 81
<211> 95
<212> DNA
<213> artificial

<220>
<223> Peptide library random oligo.


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<220>
<221> misc_feature
<222> (21)..(78)
<223> wherein "n" equals C, A, or G.
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<400> 81
aaaagggaaa aagcgggcgc vnnvnnvnnv nnvnnvnnvn nnvnnvnnvn vnnvnnvnnv 60
nnvnnvnnvn nnvnnvnnvn gccggcccgga cccgg                                     95
```

[illegible]